

### E.5 Doppler Radar Scientist (On-Board)

The on-board Doppler radar scientist (DRS) is responsible for data collection from all radar systems on his/her assigned aircraft. Detailed operational procedures and check lists are contained in the operator's manual supplied to each operator. General supplementary procedures follow. (Check off and initial.)

#### E.5.1 Preflight

- \_\_\_\_\_ 1. Determine the status of equipment and report results to the on-board lead project scientist (LPS).
- \_\_\_\_\_ 2. Confirm mission and pattern selection from the on-board LPS.
- \_\_\_\_\_ 3. Select the operational mode for radar system(s) after consultation with the on-board LPS.
- \_\_\_\_\_ 4. Complete the appropriate preflight calibrations and check lists as specified in the radar operator's manual.

#### E.5.2 In-Flight

- \_\_\_\_\_ 1. Operate the system(s) as specified in the operator's manual and as directed by the on-board LPS or as required for aircraft safety as determined by the AOC flight director or aircraft commander.
- \_\_\_\_\_ 2. Maintain a written commentary in the radar logbook of tape and event times, such as the start and end times of F/AST legs. Also document any equipment problems or changes in R/T, INE, or signal status.

#### E.5.3 Postflight

- \_\_\_\_\_ 1. Complete the summary check lists and all other appropriate check lists and forms.
- \_\_\_\_\_ 2. Brief the on-board LPS on equipment status and turn in completed forms to the LPS.
- \_\_\_\_\_ 3. Hand-carry all radar tapes and arrange delivery as follows:
  - a. Outside of Miami - to the HRD Field Ground Operations Center (FGOC).
  - b. In Miami - to MGOC or to AOML/HRD. [Note: all data removed from the aircraft by HRD personnel should be cleared with the AOC flight director.]
- \_\_\_\_\_ 4. Debrief at the appropriate operations center (FGOC or MGOC).
- \_\_\_\_\_ 5. Determine the status of future missions and notify the appropriate operations center (FGOC or MGOC) as to where you can be contacted.









980923I1 9 Georges  
Reconnaissance Flight

LPS,  $\frac{1}{2}$ : J. Gamache Wkstn. P. Dodge

2320: Just passing through 1st convective  
band  $\sim 22^\circ$ ,  $75^\circ$ W, some electricity,  
heavy rain. We're at 4650 m.

2341 center N of coast?



980925I 6 Georges Recco

THE NIGHT CREW, PART II

"LPS" P. Dodge  $\frac{1}{2}$ , WKSTN: P. Dodge, D Cecil

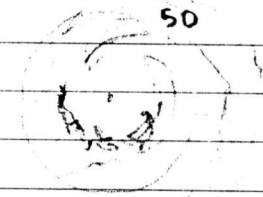
WARDS: Wen-Chan Lee, SAR (?) Wayne Wright

012305: Take off from Tampa Intl Apt  
to do recon in G Georges as he has exited  
the coast and hole for the KEYS.

0153 started recording F/AST  
dual PRF 1600-1066

0255

0258



$23^\circ 04'.7$   $79^\circ 37'.4$

85 KTS on E side  
of eye

0428  
sketch 150



617 lightning, 9 m/s  $\uparrow$   
in the eastern eyewall  
main band

711 Band  $\sim$  1 coast N of  $25^\circ$ ,  
 $80^\circ 34'$  - scalloped !!!

Georges 9-23, 24: Georges emerged from Haiti as a marginal hurricane, then made landfall on east end of Cuba. Although MSLP rose to 996mb, Georges has maintained hurricane status, with a report of 10-minute sustained 75 mph wind in Cuba on Thursday (9-24) morning, with circulation center approaching North coast. IR imagery Thurs. morning suggest convection is beginning to wrap around center again.

Evening 9-24: Eye has emerged from Cuba, IR shows convection blowing up on east side and wrapping around center. Eye becomes evident from Florida 88-D's.

0221 UTC: 980925 I Thurs. Night 09-25-98 0130 UTC  
~~0221~~ UTC: ~~FL 5300'~~ eye evident on LF radar, about 170 nmi, 120° to center; eye appears to be completely over water  
1st outer band appears to have just cleared Key West moving East-to West

0223 Tail radar sees decent cell ~60 km to right (west)

0232 Turning to 120° heading for Receo run;

Rad. Altitude 1597m; P=838.4, T=19.2, T<sub>0</sub>=15.4, ws=39kt, wd=40°

0234 Eye center 100 nmi, 120°; ~50nmi diameter eye

Eyewall ~28 dBZ

0243 Comma-shaped eye :



# Flight 980925 I

9-24-98 NOAA43 Flight From Tampa  $\approx$  0130 UTC  
9-25-98

0246 What did Monica find in her pocket?

A wad of Bills.

0247 Entering radar eyewall's

Elliptical eyewall  $\sim$  50 nmi E-W, 40 nmi N-S

0248 53 kt max wind; max dBZ 36 in north eyewall

0253  $6 \text{ m s}^{-1}$  updraft inside broad wind max

0255  $\sim$  45 dBZ in south eyewall's plane is near  
center of radar eye - relatively smooth  
ride so far with some very light turbulence

0258  $23^{\circ}04,7''$   ~~$31^{\circ}$~~   $79^{\circ}37,4''$  2 kt wind, 987 mb  
pilot sees stars

0301 Tracking  $90^{\circ}$  outbound toward east eye; looks  
like very good eyewall ~~refl~~ <sup>refl</sup> max is wrapping  
around SE

0304  $\pm 4 \text{ m s}^{-1}$  vertical drafts; briefly had ~~quick~~ <sup>quick</sup> accelerations  
that LIP maneuvers would be happy with

0308 85 kt max wind, 1540 m altitude

Broad wind max; P. Dodge says that's similar  
to last night's flight

We clipped northern edge of eyewall refl. max  
of 45-50 dBZ wrapping along SE sector

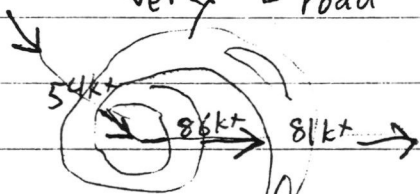
0312 36 dBZ in secondary rainband ahead

First crossing: 54 kt in WNW eyewall ( $300^{\circ}$ ); 86 kt in E  
eyewall ( $90^{\circ}$ ); 987 mb center;  $6 \text{ m s}^{-1}$  updraft



0316 ~~Approaching~~ Approaching secondary band on radar -  
secondary wind max nearly matches the first:  
81 kt so far about 40 nmi east of  
eyewall

0320 We're down to 70 kt; wind max seemed  
very broad



0325 Now seeing 40 dBZ in the rainband we just passed

0330 Tracking toward 330° outside 2ndary rainband

0400 ~~Have~~ Have turned due north, already due north  
of center; ~ 100 nmi north of radar center

0405 Nice bright band on tail radar

0409 Turning, heading south (180°) for penetration  
preparing to enter from north, exit northeast,  
then re-enter from NW

0428 Approaching north side of the secondary  
rain band's strong winds don't extend as far  
on this N leg as on the NE leg

0431 We're veering ~~east~~ east of south to get to center

0434 Wind has dropped after 78 kt peak ~~at~~ just  
inside the ~~2nd~~ 2ndary rainband (peak was  
between N. eyewall and 2ndary band)

710 0436 East eyewall, south eyewall showing 40+ dBZ, but  
not continuous

0441 Clear Above; ocean surface visible below,  
circular clouds below us" says someone  
on headset

0444 985 mb, 0,3 kt, turning to 45° heading (NE)  
23° 14,5" 80° 00,4" WNW movement, 13 kt  
from previous fix

No distinct wind max with north eyewall;  
max wind was between eyewall and 2dry band.

0453 Tail radar re-started

0454 A little bumpy, 3 m/s<sup>-1</sup> vel., but gradient  
of horiz. vel. is strong on inside of  
eyewall, both here (NE of storm) and on  
previous outbound leg.

Max wind 87 kt

Eyewall Refl max has wrapped further  
around to the NE, 40+ dBZ

0504 2dry wind max slightly bumpy not too interesting  
in the flight level data

0510 Turning to 270° heading (going west across  
N. end of storm for a approach to eye  
from the NW)

0525 Had about 70 kt wind in N. 2dry rain band  
as we crossed from W-E from near  
Andros I. to near Key West.

0534 Now and before we've experienced some very small  
cells between N, 2dry band and Florida with  
W ~ 4 m/s<sup>-1</sup>



0600 We turned to a  $120^\circ$  heading at Key West's  
Once again approaching elliptical eye

0602 Eye open NW, but E, SE eyewall looks  
more impressive than before

Wind max was  $\sim 53$  kt, very broad

0607 "Stars dimly visible overhead through high cirrus"

0610  $986$  mb,  $23^\circ 28.8''$   $80^\circ 13.6''$

0612 Approaching east eyewall, looks fan on LF radar

0613 Lightning, mid-40's dBZ

0614  $8.7$  m·s<sup>-1</sup>

0615 "80% chance of this sucking" - Lightning

0616 More lightning

0620 Max wind was  $\sim 75$  kt

0626 LF radar no longer shows the 2dry  
rain band we penetrated at 0316,

Wind on east side outside of eyewall  
not as strong as before —  $60$ - ~~$70$~~  kt

0632 Had about  $2$  m·s<sup>-1</sup> updraft,  $73$  kt wind — maybe  
that was 2dry wind max

0638 Turning to  $318^\circ$  heading;  $4$  m·s<sup>-1</sup> updraft.  
in turn - fairly bumpy

0644 Nice looking individual cell just to right of plane,  
after we turn left to avoid it.

0647  $75$  kt wind matches ~~my~~ my horiz'l wind  
I noticed on last penetration

0652  $7$  m·s<sup>-1</sup> up,  $79$  kt - maybe a hint of a  
band on radar is  $\sim 150$  km NE of center

- 0657 Somewhat bumpy, between ~~the~~ NE eyewall and outer band ~~oriented~~ oriented WNW-ESE from Miami
- 0708 turns ~~to~~ toward West ( $270^\circ$ )
- 0717 Now heading south for another penetration
- 0720 Coming back into north dry band  
Eye has gotten smaller ( $\sim 30$  nmi across) since we started mission
- 0728 76 kt max north of north eyewall
- 0731 Eye still elliptical, with  $\sim 45$  dBZ on East side
- 0737 984 mb,  $23^\circ 35'$ ,  $80^\circ 43' W$ ; 14 kt,  $300^\circ$  motion since first fix  
Heading out to NE ( $45^\circ$ )
- 0740 Highest dBZ is in E eyewall; S eyewall also  $\sim 40$  dBZ; looks like outer eyewall wrapping from N side around to SSE, with good dBZ on South outer eyewall(?) over Cuba
- 0745:15 Dropsonde, inner edge of NE eyewall; PTH, wind good  $\sim 38$  m/s<sup>-1</sup> on way down; 986 mb,  $23^\circ$ ,  $30.1$  m/s<sup>-1</sup> @ 8 m
- 0747 81 kt, not nearly as bumpy as before
- 0800 4 m/s<sup>-1</sup> updraft after a little band
- 0803 76 kt
- 0805 Turning to  $270^\circ$  track; wind was  $\sim 75$  kt all the way out where we turned
- 0807 Heading west for another (final) approach from NW, Peter getting interviewed about dropsonde, someone mentioned Thunder 105 (Tampa Bay station doing remotes from the plane).

0821 Radars go down

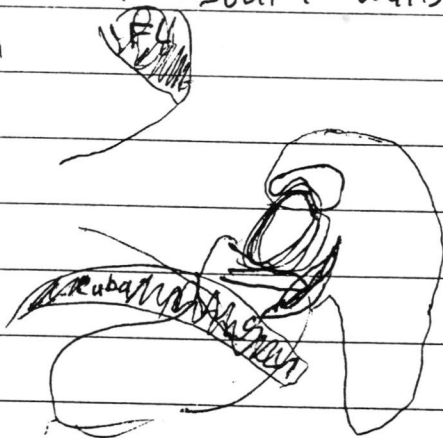
~~0830-25~~

0831 Turning toward  $135^\circ$

0840 North eyewall now looks good,  $\sim 35-40$  dBZ

0842 Eye now looks like SW-NE oriented Ellipse; was W-E earlier - reminds me of Wen-Chau's STy. Herb animations, where elliptical eye rotated along.

0843 Both North and South walls look good, West open



0851 983 mb.  $23^\circ 36.7''$   $80^\circ 46.9''$

0852 Climbing out for trip to Savannah, GA

0853 Ascending, heading  $345^\circ$  toward FL Keys, NW eyewall